

Remarks

This is in response to the Office Action dated October 24, 2001. Claims 1-47 have been canceled without prejudice. New claims 48-72 have been added. Claims 48-72 are currently pending. Reexamination and reconsideration are respectfully requested.

Claims 1-21 and 44-47 were non-elected claims (in response to an election/restriction requirement) and have been canceled without prejudice.

Claims 22-43 were rejected under 35 U.S.C. 103 as unpatentable over U.S. Patent No. 5,470,793 to Kalnitsky taken with U.S. Patent No. 5,960,306 to Hall et al. Claims 22-43 have been canceled without prejudice.

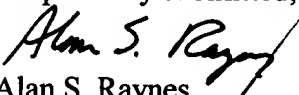
New claims 47-72 have been added. It is believed that no new matter has been added. Support for the claims may be found throughout the specification and the original claims. The primary reference cited by the Examiner, Kalnitsky, appears to relate the use of a silicon nitride layer to protect and isolate underlying layers during wet etching. The problem Kalnitsky appears to address is described at col. 1, lines 25-42, which describes forming contact vias through insulating layers by a process utilizing an isotropic wet etch followed by an isotropic plasma etch. The problem described is that voids, defects or the like in a dielectric layer may permit the wet etch chemicals to travel to the underlying conductive layers and etch part of the conductive layers away. Kalnitsky notes at col. 1, lines 53-55, that the same problem may occur in bonding pads during wet etching.

Kalnitsky addresses the wet etching problem through the use of a silicon nitride layer. As seen in Fig. 5 of Kalnitsky, a photoresist layer 30 is formed directly on dielectric layer 24, which is directly on silicon nitride layer 24, which is directly on layers 22 (glass) and 20 (dielectric). As seen in Fig. 6 of Kalnitsky and described at col. 3, lines 35-44, a wet etch is performed to etch through the dielectric layer 24. The silicon nitride layer 24 stops the wet etchant from reaching the other layers. The silicon nitride layer 38 and the underlying layers are then etched anisotropically to extend the opening to the contact 18. Fig. 7 of Kalnitsky illustrates the silicon nitride layer 38 and the underlying layers having vertical side surfaces surrounding the etched opening.

New claim 48 recites in part "forming a mask layer on the protective insulating region in direct contact with a surface of the second insulation layer . . . and dry etching through the surface of the second insulation layer at the aperture in the mask to form an opening extending through the second insulating layer and the first insulating layer to the pad." Applicant respectfully submits that the Examiner has cited no portion of Kalnitsky that describes or suggests "a mask layer in direct contact with a surface of the second insulating layer" and "dry etching through the surface of the second insulating layer" as recited in claim 48. Instead, Kalnitsky appears to perform a wet etch through the surface of the dielectric layer 24 that the photoresist 30 is in direct contact with. The other art cited by the Examiner does not overcome the deficiencies of Kalnitsky. Accordingly, for at least the above reasons, applicant respectfully submits that claim 48 and its dependent claims 49-63 are in patentable over the cited art. Independent claim 64 and its dependent claims 65-67, and independent claim 68 and its dependent claims 69-72, can be distinguished in a manner similar to claim 48.

Applicant respectfully submits that claims 48-72 are in patentable form. Reexamination and reconsideration are respectfully requested. If, for any reason, the application is not in condition for allowance, the Examiner requested to telephone the undersigned to discuss the steps necessary to place the application into condition for allowance.

Respectfully submitted,

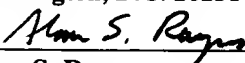

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 Alan S. Raynes

April 24, 2002
 Date